

REMARKS

Claims 1-5 and 13 have been rejected. Claims 6-12 have been canceled without prejudice or disclaimer to the subject matter recited therein. Claims 1 and 13 have been amended herein. Therefore, claims 1-5 and 13 are pending.

Approval and entry of this amendment are respectfully requested.

The Drawings:

The drawings were objected to for failing to comply with 37 C.F.R. §1.84(p)(4). More specifically, the reference character "94a" had been used to designate two distinct and separate features of the claimed invention. Corrective thereto, Applicants have submitted herewith a Request for Approval of Drawing Changes, which properly designates the porous plate as "94" (as opposed to "94a"). Accordingly, withdrawal of this rejection is respectfully requested.

The drawings were also objected to for failing to comply with 37 C.F.R. §1.84(p)(5). Applicants respectfully submit that the above correction to the drawings (specifically, Fig. 32B) has rendered this objection moot, as the drawings now properly refer to the "porous plate" as "94", and the "porous plate holes" as "94a". Accordingly, withdrawal of this objection is respectfully requested.

The Specification:

The specification is objected to due to various informalities. The careful attention given to the application is duly noted. Accordingly, page 24, line 27 of the present specification has been

amended to read "the redistribution layer 34", as suggested by the Examiner. Entry of this amendment and withdrawal of the objection are respectfully requested.

Rejection under 35 U.S.C. §102(b):

Claim 1 has been rejected under 35 U.S.C. §102(b) as being anticipated by **Dasse et al.** (U.S. Patent No. 5,594,273). Applicants respectfully traverse this rejection for the reasons stated hereinbelow.

The Examiner asserts in the Office Action that a mark member is indicated by the reference numeral **68** in FIG. 3 of **Dasse et al.** However, what is indicated by the reference numeral **68** is an identification code circuit, which is not a reference mark related to the present invention.

Nevertheless, claim 1 has been amended herein to more particularly point out and distinctly claim the invention which applicant regards as the invention. Accordingly, Applicants respectfully submit that claim 1, as amended, is not anticipated by **Dasse et al.**. Therefore, reconsideration and removal of this rejection are respectfully requested.

Rejection under 35 U.S.C. §102(e):

Claim 13 has been rejected under 35 U.S.C. §102(e) as being anticipated by **Ishikawa et al.** (U.S. Patent No. 6,280,308). Applicants respectfully traverse this rejection for the reasons stated hereinbelow.

Ishikawa et al. discloses different suction systems so as to fix wafers having different diameters. The present invention, however, features a suction system which applies a suction force

to a wafer sequentially from the inner side toward the outer side, so as to positively fix a warped wafer. Nevertheless, claim 13 has been amended herein to more particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Moreover, in making this rejection, the Office has stated in relevant part that:

“a vacuum chuck table (48 in Fig. 1) having a plurality of concentric suction grooves (78 A ~ 78D); and suction passages (80A ~ 80D) connected to the suction grooves (see Fig. 3), the suction grooves (78A ~ 78D) being grouped into a plurality of groups so that each of the suction passages is connected to the suction grooves included in a corresponding one of the groups (see Fig. 3 and Fig. 4), wherein a suctioning force is sequentially introduced into the suction passages at different timing.”

Therefore, as correctly identified by the Office, **Ishikawa** indeed discloses a plurality of suction grooves (Fig. 3, #78 A ~ 78D) and a plurality of suction passages (Fig. 3, #80A ~ 80D). However, they are integral parts of a pad body 76, not at all part of the chuck table 48. Therefore, the Office statement that **Ishikawa et al.** discloses a chuck table “having a plurality of concentric suction grooves (78 A ~ 78D); and suction passages (80A ~ 80D) connected to the suction grooves (see Fig. 3)” are simply unsupported by **Ishikawa**. Should the Office continues to maintain this position, the Applicants respectfully request the Office to provide citations as to where in **Ishikawa** is there a disclosure of a chuck table having any suction grooves, suction passages and the suction groups being divided into groups.

It is well settled that:

“A claim is anticipated only if each and every element *as set forth in the claim* is found, either expressly or inherently described, in a single prior art reference.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1567, 7 USPQ2d 1057 (Fed. Cir. 1988).

Since **Ishikawa** fails to disclose a chuck table having suction grooves, suction passages and having the suction passages being divided into groups, as positively claimed in independent claim 13. Independent claim 13 patentably distinguishes over **Ishikawa**. Reconsideration and withdrawal of this rejection are respectfully requested.

Rejection under 35 U.S.C. §103(a):

Claims 1-5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over **Shibata** (U.S. Patent No. 6,034,437) in view of **Nara et al.** (U.S. Patent No. 5,565,988). Applicants respectfully traverse this rejection for the reasons stated hereinbelow.

Shibata et al. teaches a basic structure of a semiconductor device to which the present invention is related. However, **Shibata et al.** fails to teach or disclose the mark member which serves as an alignment mark.

Nara et al. merely teaches an alignment mark provided on a substrate. **Nara et al.** fails to teach, suggest or disclose a mark member serving as an alignment mark located in a predetermined positional relationship with metal posts, as recited in the amended claim 1, or an alignment mark made of the same material with electrode pads, as recited in claim 4.

For at least the above reasons, the present invention patentably distinguishes over the cited art. Accordingly, reconsideration and removal of this rejection is respectfully requested.

Moreover, in making this rejection, the Office has stated in relevant part that:

“a semiconductor element (1) having a plurality of electrodes (5); a redistribution layer (6 and 8) which connects the electrodes of the

semiconductor device to electrode pads (7) located in predetermined positions of the redistribution layer (see Fig. 12); a plurality of metal posts (9) formed on the electrode pads (7) of the redistribution layer (6 and 8); a plurality of metal posts (9) formed on the electrode pads (7) of the redistribution layer (6 and 8), the metal posts (9) being configured to be provided with external connection electrodes (see Fig. 12.....”

While Applicants agree with the Office assessment that **Shibata** fails to teach or suggest any mark member, the Applicants respectfully disagree with the rest of the Office assertions. In fact, as explained in **Shibata**, reference numeral 5 designates an electrode pad, not an electrode as asserted in the Office action; reference numeral 6 designates an insulating layer, not a redistribution layer as asserted in Office action; reference numeral 8 designates a second insulating layer, not a redistribution layers as asserted by in Office action; reference numeral 9 designates a first terminal bumps, not a metal posts as asserted in Office action; reference numeral 7 designates a connector pattern, not an electrode pad as asserted in the Office action. Therefore, even **Shibata** disagrees with the Office interpretation of this reference. Since the Office has incorrectly interpreted various individual elements, the Office assertion of the inter-relationships among these elements are also incorrect. It is respectfully submitted that combining this incorrect interpretation of the primary reference with the second reference would not arrive at the claimed invention.

Heretofore, independent claims 1 and 4 patentably distinguish over the applied prior art references. All claims dependent thereupon, also patentably distinguish over the applied prior art references. Reconsideration and withdrawal of this rejection are respectfully requested.

Rejection under 35 U.S.C. §103(a):

Claims 1 and 4 have been rejected under 35 U.S.C. §103(a) as being unpatentable over **Baba** (U.S. Patent No. 6,016,013) in view of **Schwartz et al.** (U.S. Patent No. 5,657,394). Applicants respectfully traverse this rejection for the reasons stated hereinbelow.

The Examiner asserts that **Schwartz et al.** discloses at least one mark member (Fig. 6). However, Fig. 6 of **Schwartz et al.** shows a *scrub* mark, which is not a mark member. The scrub mark cannot be made of the same material with metal posts or electrode pads.

For at least this reason, claims 1 and 4, as amended, contain patentable subject matter which distinguishes over the cited prior art. Accordingly, reconsideration and removal of this rejection are respectfully requested.

Moreover, in making this rejection, the Office has stated in relevant part that:

“Note Fig. 2 of **Baba**, where the reference shows a semiconductor device comprising: a semiconductor element (1) having a plurality of electrodes (2); a redistribution layer (15) which connects the electrodes of the semiconductor device to electrode pads (12) located in predetermined positions of the redistribution layer (see Fig. 2); a plurality of metal posts (11) formed on the electrode pads (12) of the redistribution layer (15), the metal posts (11) being configured to be provided with external connection electrodes (see Fig. 2) except at least one mark member which serves as an alignment mark located in a predetermined positional relationship with the metal posts, wherein the mark member is made of the same material as the metal posts.”

While Applicants agree with the Office assessment that **Baba** fails to teach or suggest a mark member and the mark member is made of the same material as the metal posts, Applicants respectfully disagree with the rest of the assertions made in the Office action. Specifically, reference numeral 2 designates a first electrode pad, not an electrode as asserted in the Office action; reference

numeral 11 designates a second through hole, not metal posts as asserted in the Office action; reference numeral 12 designates a second wire, not electrode pads as asserted in the Office action; and reference numeral 15 designates an eposy-type resin, not a redistribution layer as asserted in the Office action. Therefore, even **Baba** disagrees with the Office interpretation of this reference. Since the Office has incorrectly interpreted various individual elements, the Office assertion of the inter-relationships among these elements are also incorrect. It is respectfully submitted that combining this incorrect interpretation of the primary reference with the second reference would not arrive at the claimed invention.

Heretofore, independent claims 1 and 4 patentably distinguish over the applied prior art references. All claims dependent thereupon, also patentably distinguish over the applied prior art references. Reconsideration and withdrawal of this rejection are respectfully requested.

Prior Art Indicated to be Pertinent to the Disclosure:

The Office has provided a list of prior art indicated to be pertinent to the Applicants' invention. Consistent with the understanding as stipulated in MPEP 706.02 that only the best prior art should be applied, the Undersigned has regarded the prior art contained on the list to be no more pertinent than the applied prior art of record.

CONCLUSION

In view of the aforementioned amendments and accompanying remarks, all pending claims are in condition for allowance. There being no other objections or rejections, allowance of the present invention is respectfully requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Attached herewith is a paper showing the claims, as amended, and entitled "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,
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Enclosures: VERSION WITH MARKINGS TO SHOW CHANGES MADE
Request for Approval of Drawing Changes

VERSION WITH MARKINGS TO SHOW CHANGES MADE
U.S. Serial No. 09/577,932

IN THE SPECIFICATION:

The paragraph beginning at page 24, line 18, has amended as follows:

--The semiconductor device 30 comprises: a semiconductor chip 32 formed on a wafer; a redistribution layer 34 formed on the semiconductor chip 32; a plurality of electrode pads 36 formed on the redistribution layer 34; and a plurality of solder balls 38 as protruding electrodes formed on the electrode pads 36. The redistribution layer 34 is provided for redistributing the electrodes of the semiconductor chip 32 to predetermined positions on the redistribution layer 36 34.--

IN THE CLAIMS:

Claims 6-12 have been canceled.

Claims 1 and 13 have been amended as follows:

1. (Amended) A semiconductor device comprising:
 - a semiconductor element having a plurality of electrodes;
 - a redistribution layer ~~which connects the electrodes of the semiconductor device to electrode pads located in predetermined positions of the redistribution layer~~ having a plurality of electrode pads and conductive patterns connecting the electrodes of the semiconductor element to the respective electrode pads;
 - a plurality of metal posts formed on the electrode pads of the redistribution layer, the metal posts being configured to be provided with external connection electrodes; and

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at least one mark member which serves as an alignment mark located in a predetermined positional relationship with the metal posts,

wherein the mark member is made of the same material as the metal posts.

13. (Amended) An apparatus for fixing a semiconductor wafer by suction, comprising:

a vacuum chuck table having a plurality of concentric suction grooves; and

a plurality of suction passages being connected to the plurality of concentric suction grooves, the plurality of concentric suction grooves being ~~grouped~~ divided into a plurality of groups so that each of the plurality of suction passages is connected to ~~the~~ one of a corresponding suction grooves ~~included in a corresponding~~ belonging to one of the plurality of groups; and

~~wherein a suctioning force is sequentially introduced~~ means for sequentially introducing a suctioning force into the suction passages at different timing.